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CHANGES IN KNOWLEDGE AND ATTITUDE IN MANAGEMENT OF INITIAL DENTAL TRAUMA

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ABSTRACT

Purpose: To evaluate the changes in knowledge and attitude of school teachers regarding Traumatic Dental Injuries (TDIs) following oral health education on initial dental trauma, in Sundernagar city of Himachal Pradesh. *Methods:* The study was based on a pre and post evaluation questionnaire with relevant questions to evaluate the level of knowledge and attitude of school teachers about initial dental trauma management at baseline and six months after the implementation of the programme. Associations were assessed using Chi square test. *Results:* A statistically significant difference ($p \leq 0.001$) in the knowledge and attitude of school teachers was recorded following the implementation of oral health education programme. *Conclusion:* It is recommended that public education targeted at teachers should be carried out to increase knowledge on initial dental trauma management.

INTRODUCTION

Traumatic Dental Injuries (TDIs) remain one of the most significant oral health problems in children, resulting in pain and distress (Al-Jundi, 2002). There is perhaps no single dental disturbance that has greater psychological impact on the parents and the child than the loss or fracture of a child's anterior teeth. Among the TDIs, Tooth avulsion results in major functional and aesthetic disturbance for patients (Oliveira *et al*., 2007). The frequency of tooth avulsion in the permanent dentition ranges from 0.5 to 16% and 7 to 13% in primary dentition. Avulsion injuries in children most frequently occur between ages 7 and 9 years when the permanent incisors are erupting, and are more common in boys than in girls (Samir Riaz Qazi *et al*., 2009). The most predominant factor determining the prognosis of a replanted tooth following avulsion is the viability of the periodontal ligament left on the root prior to replantation. Correct intervention and prompt action at the site of the accident can play a cardinal role in improving the prognosis of a traumatized tooth. In this connection, it is important to recognize that it is frequently a member of the lay public who provides emergency care (Santos *et al*., 2009). Thus; it becomes crucial to ascertain the knowledge and enactment of the personnel at home or at school who are in close contact with the young children.

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Schools are the most available places to initiate dental trauma education programmes since school professionals are likely to be in contact with children soon after the injury (Saul Martins Paiva and Patricia Maria Zarzar, 2009). A number of epidemiological surveys have included parents, sports coaches and teachers and the reports have depicted an extremely low level of knowledge regarding immediate management of traumatized teeth (Saul Martins, 2009; Rodney *et al*., 2010; and Blakytny *et al*., 2001). Therefore, the purpose of the present study was to assess the knowledge and attitude about the initial management of dental trauma among school teachers in Sundernagar city of Himachal Pradesh, by application of a specific questionnaire.

MATERIAL AND METHOD

Study Sample

The present study was carried out on a total of 220 teachers randomly selected from five schools in Sundernagar city of Himachal Pradesh. A complete list of all the schools was obtained from the Directorates of school education. The study design was approved by the ethical committee of the institution.

Preparation of Knowledge, Attitude and Practice (KAP) ProForma and KAP recording: A pre and post evaluation questionnaire with relevant questions was used to evaluate the

level of knowledge and attitude of school teachers about initial dental trauma management at baseline and six months after the implementation of the programme. The questions were asked as per KAP proforma to the teachers and depending on the answers given, the relevant codes were filled by the teachers themselves. Standardized AAPD guidelines about initial dental trauma management in the form of power point presentation in the local language (Hindi) were used to educate the teachers regarding the initial dental trauma management. The Proforma was re-recorded following six months after implementation of the education programme.

Statistical Analysis

The data obtained was recorded by using statistical package for social sciences (SPSS) Version 11. Associations were assessed using Chi square test and p value of less than 0.001 was considered significant.

RESULTS

There were a comparable number of female to male teachers in various schools. The demographic characteristics of the school teachers are depicted in Table 1.

Table 1. Demographic characteristics of the Teachers

Demographic Characteristics		N (%)
Gender	Male	90 (40.9)
	Female	130 (59.1)
Educational Qualification	Graduate	56 (25.5)
	Postgraduate	164 (74.5)
Previous Professional Training	Yes	0 (0)
	No	220 (100)
First Aid Training For Management of Dental Trauma	Yes	0 (0)
	No	220 (100)
Traumatic Injury experienced during childhood	Yes	14 (6.4)
	No	206 (93.6)

Table 2: Assessment of changes observed in Knowledge of school teachers at Baseline and 6 months after Oral Health Education on management of dental trauma

Questionnaire		At Baseline N (%)	After 6months N (%)	P value
Awareness regarding Presence of a Pediatric dentist/ Pedodontist?	Yes	39 (17.7)	199 (90.5)	0.001
	No	181 (82.2)	21 (9.5)	
Age at which injury to milk teeth is common?	a. 6 months-1 year	8 (3.6)	5 (2.3)	
	b. 2-3 years	14 (6.4)	194 (88.2)	
	c. 4-5 years	66 (30.0)	18 (8.2)	.001
	d. Don't Know	132 (60.0)	3 (1.4)	
Do Injured Milk Teeth Require any Treatment?	Yes	37 (16.8)	210 (95.5)	0.001
	No	183 (83.2)	10 (4.5)	
Age at which injury to permanent teeth is common?	a. 6-7 Years	12 (5.5)	10 (4.5)	
	b. 8-12 Years	6 (2.7)	186 (84.5)	0.001
	c. 13-14 years	42 (19.1)	13 (5.9)	
	d. No idea	160 (72.7)	11 (5.0)	
How urgent it is to seek professional help if a permanent tooth comes out of its position?	a. Immediately	32 (14.5)	169 (76.8)	
	b. Within 30 minute	12 (5.5)	33 (15.0)	
	c. Within a few hours	28 (12.7)	7 (3.2)	
	d. Before next day	7 (3.2)	0 (0)	
	e. No idea	141(64.1)	11 (5.0)	0.001

Table 3. Assessment of changes observed in Attitude of school teachers at Baseline and 6 months after Oral Health Education on management of dental trauma

Questionnaire		At Baseline N (%)	After 6months N (%)	P value
First reaction when you see a child with a broken tooth?	a. Inform his/her parents	55 (25.0)	21(9.5)	
	b. Refer child to a physician	5 (2.3)	2 (0.9)	
	c. Send the child to a General Dentist	24 (10.9)	16 (7.3)	
	d. Send the child to a Pediatric Dentist	22 (10.0)	172 (78.2)	
	e. Not sure what to do	114(51.8)	9 (4.1)	0.001
What would you do if the milk tooth comes out of its socket/position?	a. Re-insert(put back) into the socket/position	0 (0)	0 (0)	
	b. Leave it like that	24 (10.9)	85 (38.6)	
	c. Refer child to a Physician	13 (5.9)	0 (0)	
	d. Send the child to a pediatric dentist	24 (10.9)	135 (61.4)	0.001
	e. Not sure what to do	159 (72.3)	0 (0)	
Following injury, a permanent tooth is out of its position/sockets, but is in the mouth only, what would you do?	a. Put the tooth back into its position	11(5.0)	193 (87.7)	
	b. Let the tooth inside the mouth	6 (2.7)	3 (1.4)	
	c. Remove the tooth from the child mouth	14 (6.4)	11 (5.0)	0.001
	d. Don't know	189 (85.9)	13 (5.9)	
If the tooth is out of the child's mouth, what would you do?	a. Save the tooth	26 (11.8)	220 (100)	
	b. Discard the tooth	194(88.2)	0 (0)	0.001

Continue……

Where would be the first place to seek Treatment?	a. Emergency hospital or physician office	105(47.7)	22 (10.0)	
	b. General dentist office	69 (31.4)	26 (11.8)	<0.001
	c. Pediatric dentist	31(14.1)	167 (75.9)	
	d. other place	15 (6.8)	5 (2.3)	
If the tooth had fallen on the ground and was covered with dirt, before reinserting into its socket/position, what would you do?	a. Scrub the tooth gently with a toothbrush	48 (21.8)	5 (2.3)	
	b. Rinse the tooth under tap water	19 (8.6)	191(86.8)	0.001
	c. Put the tooth back into the socket without any pre-treatment	5 (2.3)	13 (5.9)	
	d. Rinse the tooth with detergent or soap	18 (8.2)	0 (0)	
	e. Don't know	130(59.1)	11(5.0)	
If you do not re-insert the tooth back into its position, then how will you carry the tooth to a pediatric dentist for treatment?	a. In tap water	21(9.5)	9(4.1)	
	b. In milk	7(3.2)	183(83.2)	
	c. In saline solution	7(3.2)	7(3.2)	
	d. In child's mouth under tongue	2(0.9)	21(9.5)	
	e. Wrapped in tissue paper or gauze	120(54.5)	0 (0)	
	f. Antiseptic solution	63 (28.6)	0 (0)	0.001
	g. Please specify the other approach if any……			

The results at the start of the study and subsequent to oral health education on management of dental trauma after six months were categorized under various headings as demonstrated in Table 2 and 3. A statistically significant difference ($p \leq 0.001$) in the knowledge and attitude of school teachers was recorded following the implementation of oral health education programme on management of dental trauma.

DISCUSSION

In this study, at baseline a total sample of 220 teachers were taken from the schools of Sundernagar city which was in accordance with various studies reported in the past (Sae-Lim *et al*., 2001; Al-Jundi *et al*., 2005 and Vasileios Tzigkounakis *et al*., 2008). According to the Kaliyaperumal K, guidelines for conducting Knowledge, Attitude and Practice (KAP) study (2004), the sample should be sufficiently large so as to represent the population yet not so large that the data collection and analysis is prohibitively difficult. In the past various authors had formulated different KAP questionnaire to suit the aims and objectives of their respective studies, so based on our aims and objective a self administered proforma was made in the Department of Pedodontics and Preventive Dentistry, Sundernagar with the help of relevant studies. In our current study educational profile of teacher did not have any impact on dental trauma awareness. At the start of study, none of school teachers had undergone any professional training for "First Aid Treatment" as first aid training is not an integral component of school teachers training. Our findings were consistent with previously published studies in which teachers reported that they did not receive any education and training regarding traumatic dental injuries mamngement (Kahabuka, 2001; Caglar *et al*., 2005). This is in contrast to the high percentages of first aid training among those teachers in the Hong Kong and England studies (Chan *et al*., 2001 and Al-Jundi *et al*., 2004). The teachers were educated how the Paediatric dentists are dedicated to the oral health of children from infancy through the teen years. After the implementation of oral health education on management of dental trauma, increase in knowledge was observed from (17.7%) to (90.5%) which was statistically significant. According to AAPD guidelines, the greatest incidence of trauma to primary teeth occurs in 2-3 years of age with high incidence of trauma to maxillary incisors which is also confirmed by Anderson and Garcia-Goday(1983) (Andreasen *et al*., 1994).

The reason for the high incidence is the poor motor coordination in children of 2 -3 years of age. The baseline data regarding the knowledge about the age at which injury to milk teeth occur was 60 % which increased to 91.5% after the health education programme. Subsequently an increase in the knowledge among school teachers was observed from 37 (16.8%) to 210 (95.5%) regarding the treatment perspectives of injured milk teeth. According to Andreasen, injury to the permanent dentition is seen most commonly in the age groups of 7-11 years (Andreasen *et al*., 1994). This is attributed to greater indulgence of children in outdoor sport activities supplemented with incomplete root formation of developing permanent incisors in soft pliable bone. When the teachers were educated about the age groups prone to dental trauma, the knowledge about the most common age of injury to permanent teeth significantly increased from 6 (2.7%) to 186 (84.5%). Six months after the implementation of oral health education, 167 (75.9%) teachers reported that they would seek a pediatric dentist for treatment of injured tooth. The importance of immediate referral to seek professional help significantly increases the prognosis and survival rate of the avulsed tooth. At the baseline only 105 (47.7%) out of 220 school teachers were well aware that emergency hospital or physician office is the first place to seek treatment of avulsed tooth. 69 (31.4%) and 31 (14.1%) teachers were aware of general dentist and paediatric dentist respectively. Statistically significant increase from 31 (14.1%) to 167 (75.9%) was seen in the knowledge about the immediate referral to paediatric dentist. Poor dental first-aid knowledge among the teachers could be one of the reasons for lack of awareness.

In India, this finding is due to the fact that first aid training is not an integral component of school health teachers and mothers and indicated lack of knowledge and need for continuous spotlighted dental emergency training to school teachers. Increase in positive attitude was observed from 22 (10.0%) to 172 (78.2%) school teachers who now knew that if the child had trauma in school then sending the child to a paediatric dentist for treatment is the best option. Time lag is the most critical factor determining the prognosis of the reimplanted teeth. Thereby, the urgency to seek professional help for avulsed teeth was evaluated. Before the education program only 32 (14.5) realised the importance of immediate referral to professional personnel. After the oral health education programme, 169 (76.8) school teachers reported a need to seek urgent professional help for avulsed permanent

tooth. These results were in accordance with the studies conducted by Al-Jundi *et al*. (2004), Raphael, S.L. (1990), Chan, A.W.K. (2001), Yanxiang Zhao (Yanxiang Zhao, 2010), Avia Fux-Noy[21] in which 75% to 85% respondents were aware of urgency of seeking professional help within 30 minutes. Also, included in this study was the factor which determined the immediate response of the school teachers following the tooth injury. At the baseline 114 (51.8%) out of 220 school teachers were not sure what to do if they see child with broken tooth, 55 (25.0%) had attitude to inform his/her parents, 5 (2.3%) referred the child to a physician, 24 (10.9%) send the child to a general dentist and 22 (10.0%) send the child to a paediatric dentist.

Similar findings were also observed in the studies done by Al-Waeili H, Khairalah K and Al-Jundi SH in Jordan (2005). At the baseline 189 (85.9%) out of 220 school teachers had no knowledge about the avulsed permanent tooth when it is in mouth. Only 11 (5.0%) correctly responded about putting the permanent tooth back into its position. Similar findings were also observed in the studies done by Blakytny, C. (2001), Pacheco, L.F. (2003), Panzarini, S.R. (2005), Loh, T., Sae-Lim V. (2001). This was due to the fact that there was lack of knowledge about immediate treatment of dental trauma at emergency sites. Increase in positive attitude about putting the permanent tooth back into its position was observed 11 (5.0%) to 193 (87.7%) after oral health education on management of dental trauma. After 6 months, 87.7% of school teachers now responded that the permanent tooth must be placed back into its position and 100% considering saving the avulsed tooth was appropriate.

The education programme emphasized that if avulsion occurs and the tooth had fallen onto the ground, covered with dirt, then hold the tooth with crown portion and gently wash the tooth under running tap water without touching its root surface before immediate re-implantation. At the start of the study when the data was analyzed it was found that most school teachers had negative attitude about suitable storage media for avulsed tooth. 120 (54%) felt wrapping it in tissue paper or gauge while 63 (28.6%) felt to rinse it in antiseptic solution. These findings were comparable to the studies conducted by various authors (Rodney *et al*., 2001; Vasileios Tzigkounakis, 2008; Caglar, 2005 and Chada Pujita, 2013). The school teachers were educated that easy access to milk in the moment of the accident and 6 hours are enough to look for a dentist. Thereby, milk can be chosen as a short term storage media. Six months after the implementation of oral health education on management of dental trauma, there was an increase in positive attitude about milk being the best storage media from 7 (3.2%) to 183 (83.2%) respectively. These findings are comparable to the studies conducted by Stokes, A.N. (1992), Hamilton, (1997), Chan AWK. (2001), Sae-Lim, V. (2001), Blakytny, C. (2001), Adel Al-Asfour, (2008) and Mohammad Al-Obaida, (2010).

Conclusion

Correct management and prompt treatment of Traumatic Dental Injuries (TDIs), provide for the best prognosis of a traumatized tooth. The findings of the present study emphasize the need of education programmes and training to improve the awareness of school teachers thereby, enhancing immediate and proper management of TDIs.

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